

Air Conditioner DC Duct Type

MUND  CLIMA®

Modelos:

MUCR 12 HF2
MUCR 18 HF2
MUCR 24 HF2

MUCR 30 HF2
MUCR 36 HF2
MUCR 48 HF2
MUCR 60 HF2

ÍNDICE

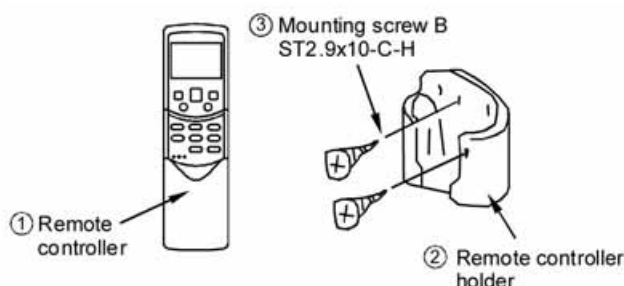
1. INSTALLATION INFORMATION.....	2
2. ACCESORIES.....	2
3. CAUTIONS ON REMOTE CONTROLLER INSTALLATION.....	2
4. INSTALATION PLACE.....	3
5. INDOOR UNIT INSTALLATION.....	4
6. INSTALL THE MAIN BODY.....	5
7. PANEL INSTALLATION.....	6
8. INSTALL THE CONNECTING PIPE.....	7
9. REFRIGERANT PIPE CONNECTION.....	8
10. CONNECT THE DRAIN PIPE.....	9
11. WIRING.....	9
12. WIRING CHART.....	10
13. NETWORK ADDRESS SET.....	13
14. TEST OPERATION.....	14
15. POINT CHECK INSTRUCTION.....	14
16. DISPLAY FUNCTION INSTRUCTION.....	14
17. MALFUNCTION CODE OF OUTDOOR UNIT.....	15

1. INSTALLATION INFORMATION

- To install properly, please read this manual at first. The air conditioner must be installed by qualified persons.
- When installing the indoor unit or its tubing, please follow this manual as strictly as possible.
- When all the installation work is finished, please turn on the power only after a thorough check.
- No further announcement if there is any change of this manual caused by product improvement.

NOTE

The installer should illustrate to users how to correctly use and maintain the air-conditioner, as well as remind users to carefully read and keep both Installation Manual and Owner's Manual well.



2. ACCESSORIES

- Installation manual (1)
- Remote controller subassembly (1)
- Pipe insulation material (2)
- Accessory drain pipe (1)
- Adhesive tape for seal (1)

Remote controller & its frame

1. Remote controller (1)
2. Frame (1)
3. Mounting screw (2)
4. Alkaline dry batteries (AM4)(2)
5. Remote controller manual (1)

3. CAUTIONS ON REMOTE CONTROLLER INSTALLATION

- Never throw or beat the controller.
- Before installation, operate the remote controller to determine its location in a reception range.
- Keep the remote controller at least 1m apart from the nearest TV set or stereo equipment. (It is necessary to prevent image disturbances or noise interferences.)
- Do not install the remote controller in a place exposed to direct sunlight or close to a heating source, such as a stove.
- Note that the positive and negative poles are in right positions when loading batteries.

4. INSTALLATION PLACE

The Indoor Unit

- There is enough room for installation and maintenance.
- The ceiling is horizontal, and its structure can endure the weight of the indoor unit.
- The air outlet and the air inlet are not impeded, and the influence of external air is the least.
- The air flow can reach throughout the room.
- The connecting pipe and drainpipe could be extracted out easily.
- There is no direct radiation from heaters

The Outdoor Unit

- There is enough room for installation and maintenance.
- The air outlet and the air inlet are not impeded, and can not be reached by strong wind.
- The place is dry and ventilative.
- The support is flat and horizontal and can stand the weight of the outdoor unit. And no additional noise or vibration.
- Your neighborhood will not feel uncomfortable with the noise or expelled air.
- There is no leakage of combustible gas.
- It is easy to install the connecting pipe or cables.

CAUTIONS

Location in the following places may cause malfunction of the machine. (If unavoidable, please consult your local dealer.)

- a. There exists petrolatum.
- b. There is salty air surrounding (near the coast).
- c. There is caustic gas (the sulfide, for example) existing in the air (near a hot spring).
- d. The Volt vibrates violently (in the factories).
- e. In buses or cabinets.
- f. In kitchen where it is full of oil gas.
- g. There is strong electromagnetic wave existing.
- h. There are inflammable materials or gas.
- i. There is acid or alkaline liquid evaporating.
- j. Other special conditions.

NOTES BEFORE INSTALLATION

1. Select the correct carry-in path.
2. Move this unit as originally packaged as possible.
3. If the air conditioner is installed on a metal part of the building, it must be electrically insulated according to the relevant standards to electrical appliances

NOTE

Remark per EMC Directive 89/336/EEC
For to prevent flicker impressions during the start of the compressor (technical process), following installation conditions apply.

1. The power connection for the air conditioner has to be done at the main power distribution. The distribution has to be of a low impedance, normally the required impedance reaches a 32A fusing point at t.
2. No other equipment has to be connected with this power line.
3. For detailed installation acceptance, please refer to your contract with the power supplier if restrictions do apply for products like washing machines, air conditioners or electrical ovens.
4. For power details of the air conditioner, refer to the rating plate of the product.
5. For any question contact your local dealer.

5. INDOOR UNIT INSTALLATION

Install the main body

Installing Ø10 hanging screw bolts. (4 bolts)
Please refer to the following figure for the distance measurement between the screw bolts.
Please install with Ø10 hanging screw bolts.
The handling to the ceiling varies from the constructions, consult the construction personnels for the specific procedures.

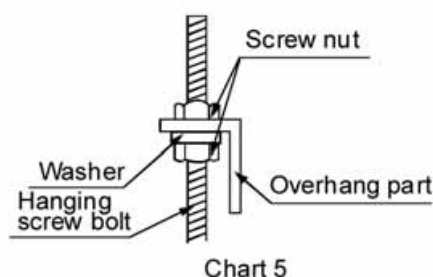
1. The ceiling where the works will be done must be flat. Consolidate the roof beam for possible vibration.

2. Cut off the roof beam.

3. Strengthen the place cut off, and consolidate the roof beam.

Carry out the pipe and line operation in the ceiling after finishing the installation of the main body.
While choosing where to start the operation, determine the direction of the pipes to be drawn out. Especially in case there is a ceiling, position the refrigerant pipes, drain pipes, indoor & outdoor lines to the connection places before hanging up the machine.

The installation of hanging screw bolts.



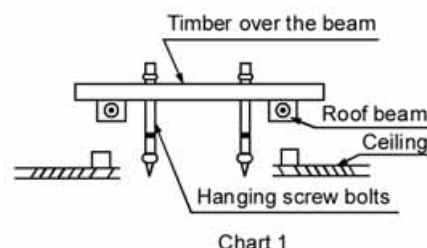
OVERHANGING THE INDOOR UNIT

- (1) Overhang the indoor unit onto the hanging screw bolts with block
- (2) Position the indoor unit in a flat level by using the level indicator, unless it may cause leakage.

THE INSTALLATION OF HANGING SCREW BOLTS

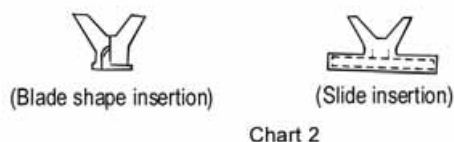
Wooden construction

Put the square timber transversely over the roof beam, then install the hanging screw bolts. (Refer to Chart 1)



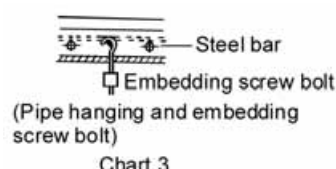
New concrete bricks

Inlaying or embedding the screw bolts. (Refer to Chart 2)



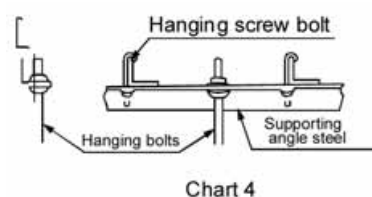
For Original concrete bricks

Use embedding screw bolt, crock and stick harness. (Refer to Chart 3)



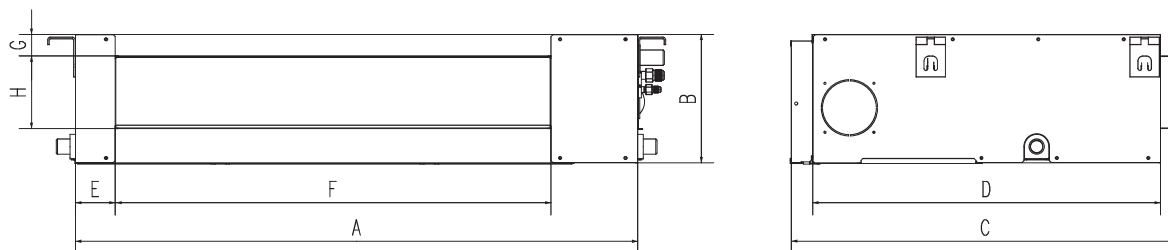
Steel roof beam structure

Install and use directly the supporting angle steel. (Refer to chart 4)

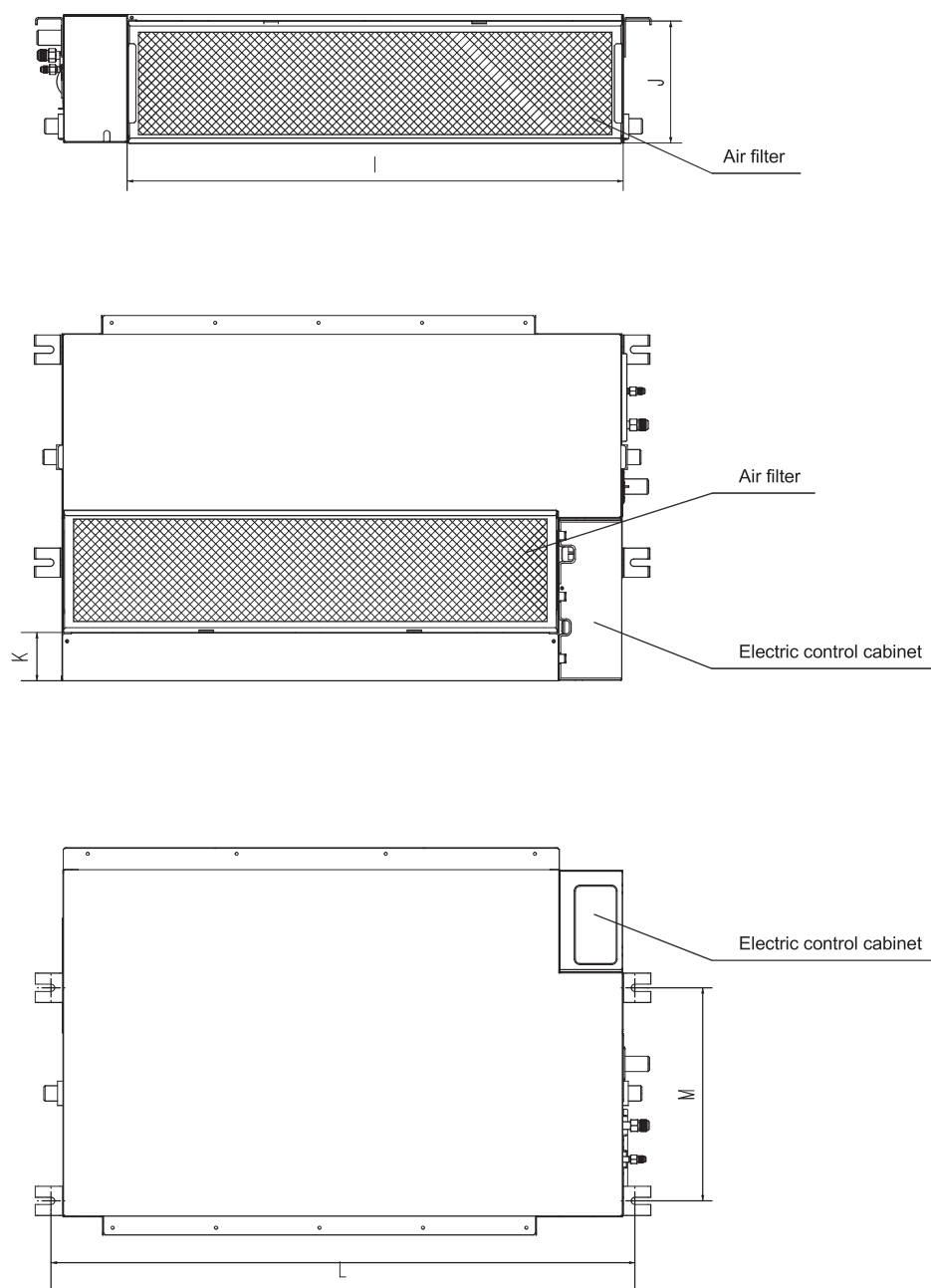


6. DIMENSIONS

Unit: mm



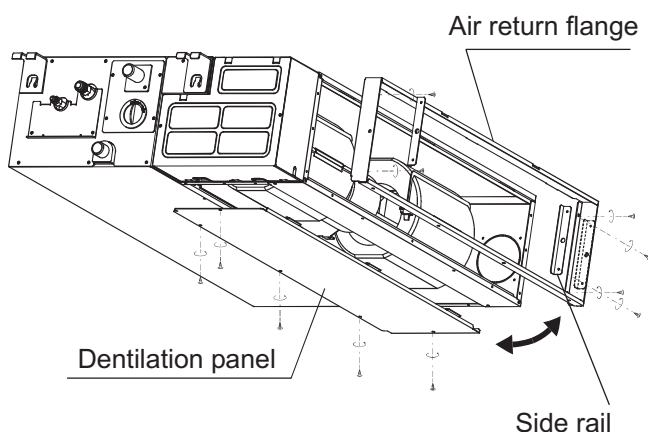
AIR RETURN OPENING SIZE



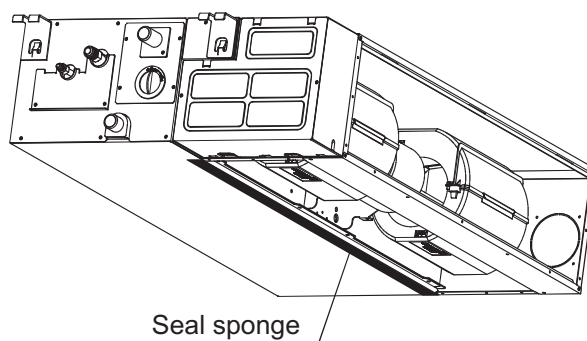
	Dimensions				Air Outlet				Air returning			Size of mounted lug	
	A	B	C	D	E	F	G	H	I	J	K	L	M
12~18	920	210	635	570	65	713	35	119	815	200	80	960	350
24	1140	210	635	570	65	933	35	119	1035	200	80	1180	350
	920	270	635	570	65	713	35	179	815	260	20	960	350
30~36	1140	270	775	710	65	933	35	179	1035	260	20	1180	490
48~60	1200	300	865	800	80	968	40	204	1094	288	45	1240	500

7. ADJUST AIR VENTILATED DIRECTION

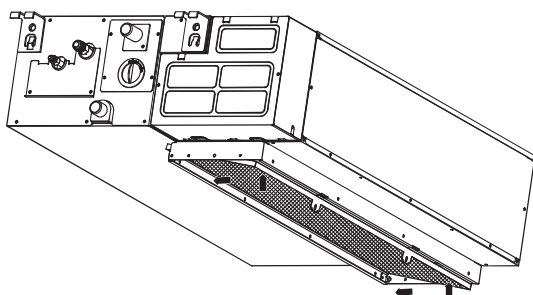
1.- Take off ventilation panel and flange, cut off the staples at side rail



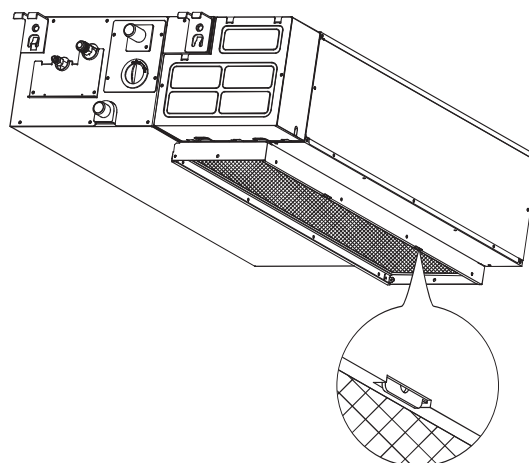
2.- Stick the attached seal sponge as per indicating place in the following fig, and then change the mounting positions of air return panel and air return flange



3.- When install the filter mesh, please plug it into flange inclined from air return, and then push up.



4.- The installation has finish, upon filter mesh which fixing blocks have been insert to the flange positional holes.



8. INSTALL THE CONNECTING PIPE

CAUTION

Check whether the height drop between the indoor unit and outdoor unit, the length of refrigerant pipe, and the number of the bends meet the following requirements:

MUCR-HF		12	18	24	30 1F	30 3F	36 1F	36 3F	48 1F	48 3F	60
MAX . HEIGHT	Outdoor Unit Top	5	12	12	15	20	20	20	25	30	30
	Outdoor Unit Bottom	5	9	9	9	12	12	12	20	20	20
	Max. length	10	25	25	25	30	30	30	50	50	50

The outdoor unit is factory charged with refrigerant. Some systems require additional charging of refrigerant depending on pipe lengths. The additional refrigerant to be charged can be calculated from the following formula:

$$R = T \times (L - 5)m$$

R(g): Additional refrigerant to be charged

T(g): The length of the liquid pipe

L(m): The quantity of charged refrigerant per meter

CAUTION

- Do not let air, dust, or other impurities fall in the pipe system during the time of installation.
- The connecting pipe should not be installed until the indoor and outdoor units have been fixed already.
- Keep the connecting pipe dry, and do not let moisture in during installation.

CONNECT THE DRAIN PIPE

Measure the necessary length of the connecting pipe, and make it by the following way.

1) Connect the indoor unit at first, then the outdoor unit. Bend the tubing in proper way. Do not harm to them.

CAUTION

Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds with hands before fasten the flare nuts.

(Refer to chart 16)

Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

2) The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other

NOTICE FOR BENDABLE PIPE

- The bending angle should not exceed 90°.
- Bending position is preferably in the middle of the bendable pipe. The larger the bending radius the better it is.
- Do not bend the pipe more than three times.

BEND THE CONNECTING PIPE OF SMALL WALL THICKNESS

- Cut out a desired concave at the bending part of the insulating pipe.
- Then expose the pipe (cover it with tapes after bending).
- To prevent collapsing or deforming, please bend the pipe at its biggest radius.
- Use bender to get a small radius pipes.

Use the market brass pipe

Be sure to use the same insulating materials when you buy the brass pipe (more than 9mm thick).

1. Locate The Pipes

- 1) Drill a hole in the wall (suitable just for the size of the wall conduit, 90mm in general), then set on the fittings such as the wall conduit and its cover.
- 2) Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.
- 3) Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.
- 4) Connect the pipes.
- 5) Then, open the stem of stop valves of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit fluently flow.
- 6) Be sure of no leakage by checking it with leak detector or soap water.
- 7) Cover the joint of the connecting pipe to the indoor unit with the soundproof/insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

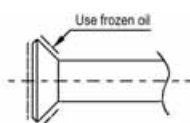


Chart 16

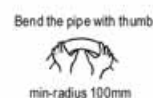


Chart 17

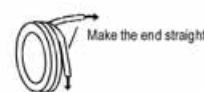
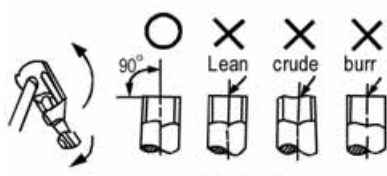


Chart 18

9. REFRIGERANT PIPE CONNECTION



Flaring

Chart 19

1. Cut a pipe with a pipe cutter.
2. Insert a flare nut into a pipe and flare the pipe.

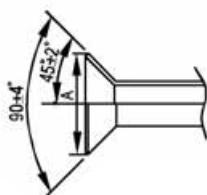


Chart 20

Outside-diameter (mm)	Max	Min
Ø6.35	8.7	8.3
Ø9.53	12.4	12.0
Ø12.7	15.8	15.4
Ø16	19.0	18.6
Ø19	23.3	22.9

Fasten the nuts

Put the connecting tubing at the proper position, wrench the nuts with hands, then fasten it with a wrench. (Refer to Chart 21)

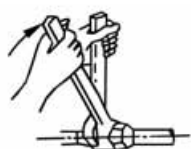


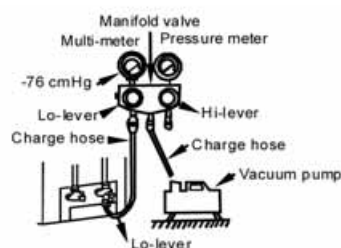
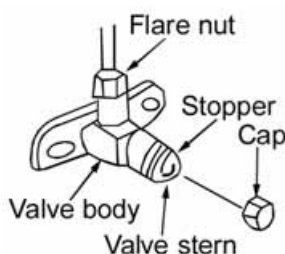
Chart 21

CAUTION

Too large torque will harm the bellmouthing and too small will cause leakage. Please determine the torque according to Table 2.

Tubing Size	Torque
Ø6.35	14.4~17.2 N.m
Ø9.53	32.7~39.9 N.m
Ø12.7	49.5~60.3 N.m
Ø16	61.8~75.4 N.m
Ø19	92.7~118.6 N.m

Table 2



The necessary filling amount of refrigerant

Refrigerant volume to be added is calculated according to outdoor unit installation manual. Be sure to add refrigerant measuring by a scale. L: The length of the pipe
Please record the quantity added and store it carefully for future maintenance.

Expel the air with a vacuum pump

(Refer to Chart 22)

(please refer to its manual for the way of using manifold value)

- Loosen and remove the maintenance nuts of stop values A and B, and connect the charge hose of the manifold value with the maintenance terminator of stop value A. (Be sure that stop values A and B are both

Chart 22

- closed)
- Connect the joint of the charge hose with the vacuum pump.
- Open the Lo-lever of the manifold value completely.
- Turn on the vacuum pump. At the beginning of pumping, loosen the maintenance terminator nut of stop value B a little to check whether the air comes in (the sound of the pump changes, and the indicator of compound meter turns below zero). Then fasten the nut.
- When the pumping has finished, close the Lo-lever of the manifold value completely and turn off the vacuum pump.

When you have pumped for over 15 minutes, please confirm that the indicator of multi-meter is on 1.0×10^{-5} Pa (-76 cmHg).

- Loosen and remove the quadrangle cover of stop values A and B to open stop value A and B completely, then fasten them.
- Disassemble the charge hose from the repair-mouth of stop value A, and fasten the nut.

CAUTION

All the stop values should be opened before test operation. Each air conditioner has two stop values of different sizes on the side of the outdoor unit which operate as Lo-stop value and Hi-stop value, respectively.

Check the leakage

Check all the joints with the leak detector or soap water.

Insulation

Be sure to with insulating materials cover all the exposed parts of the flare pipe joints and refrigerant pipe on the liquid-side and the gas-side. Ensure that there is no gap between them. Incomplete insulation may cause water condensation.

10. CONNECT THE DRAIN PIPE

1. Install indoor unit drain pipe

The outlet has PTI screw bread, Please use sealing materials and pipe sheath (fitting) when connecting PVC pipes.

CAUTION

- The drain pipe of indoor unit must be heat insulated, or it will condense dew, as well as the connections of the indoor unit.
- Hard PVC binder must be used for pipe connection, and make sure there is no leakage.
- With the connection part to the indoor unit, please be noted not to impose pressure on the side of indoor unit pipes.
- When the declivity of the drain pipe downwards is over 1/100, there should not be any win ding.
- The total length of the drain pipe when pulled out transversely shall not exceed 20m, when the pipe is over long, a prop stand must be installed to prevent winding.
- Refer to the figures on the right for the installation of the pipes.

2. Drainage test

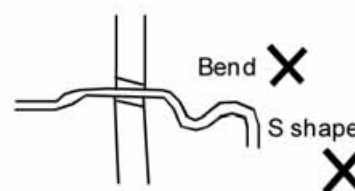
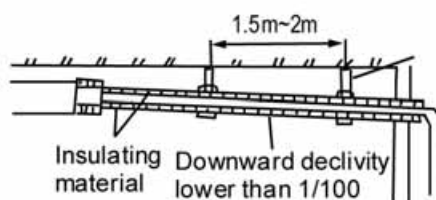
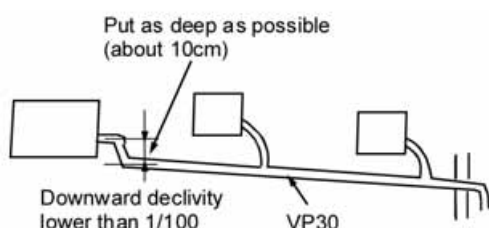
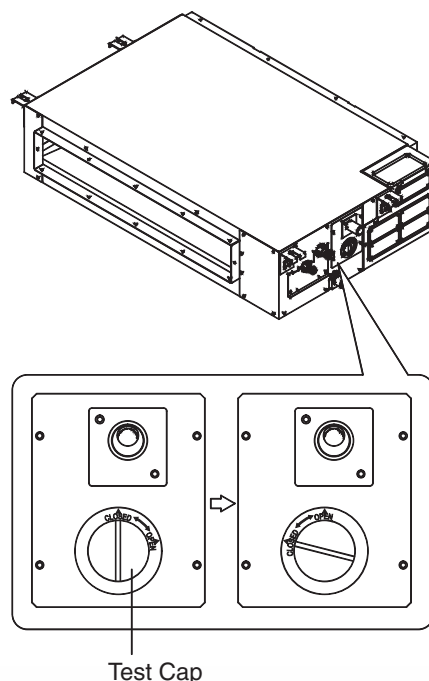
Check whether the drainpipe is unhindered
New built house should have this test done before paving the ceiling.

Remove the test cover, and stow water of about 2000ml to the water receiver through

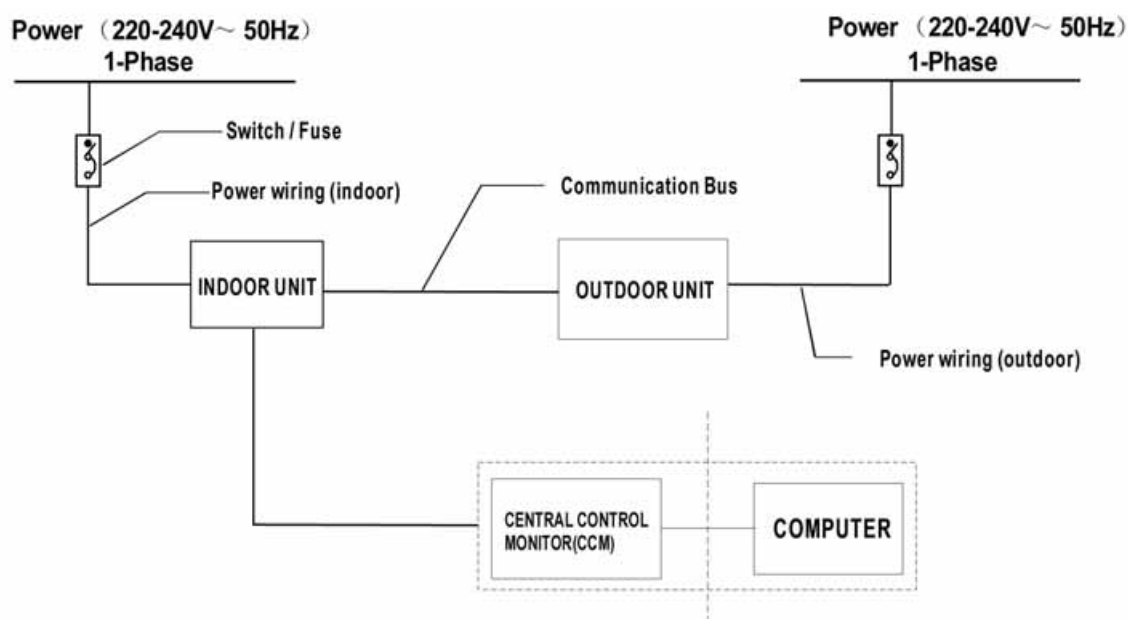
11. WIRING

Attaching wiring

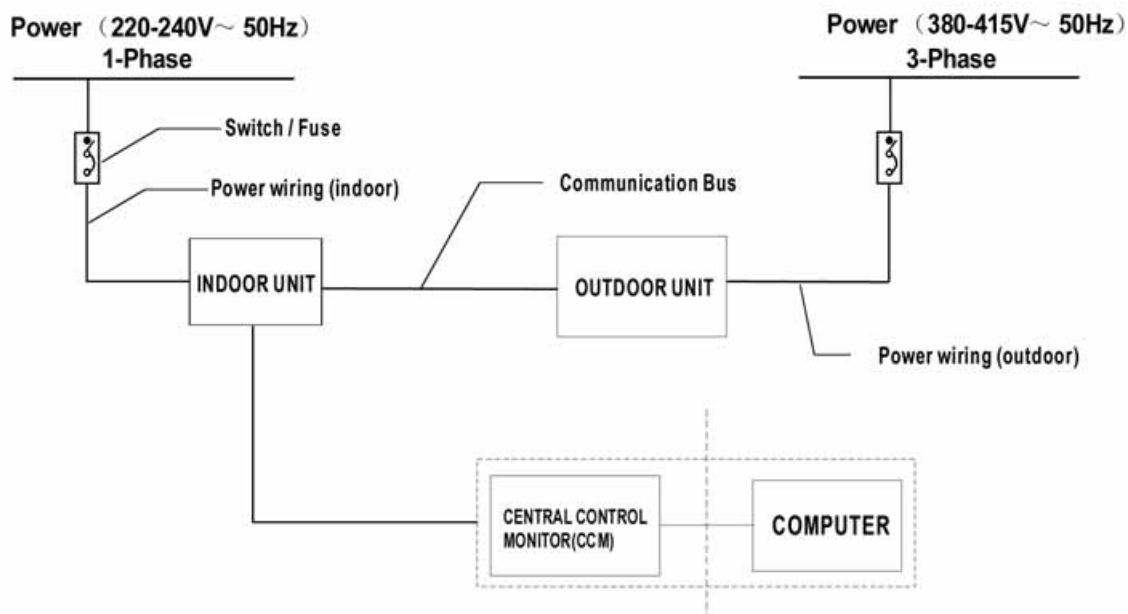
1. The air conditioner should use separate power supply with rated voltage
2. The external power supply to the air conditioner should have ground wiring, which is linked to the ground wiring of the indoor and outdoor unit.
3. The wiring work should be done by qualified persons according to circuit drawing.
4. Aleakage protector should be installed according to the National Standard concerning electrical appliance.
5. Be sure to locate the power wiring and the signal wring well to avoid cross-disturbance and their contact with connecting pipe or stop value body.
6. The wiring attached to this air conditioner is 10m long. Be sure to prolong it with wiring of the same type and proper length if necessary. Generally, do not twist two wiring together unless the joint is soldered well and covered with insulator tape.
7. Do not turn on the power until you have checked carefully after wiring.



12. WIRING CHART

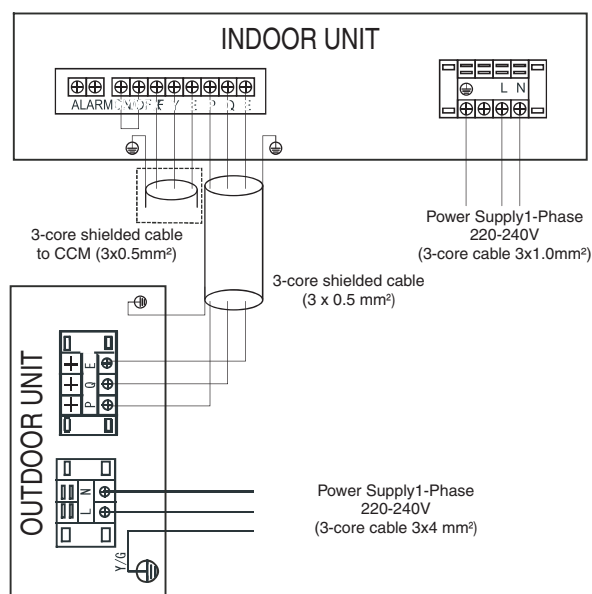


For 18000-24000 Btu/h

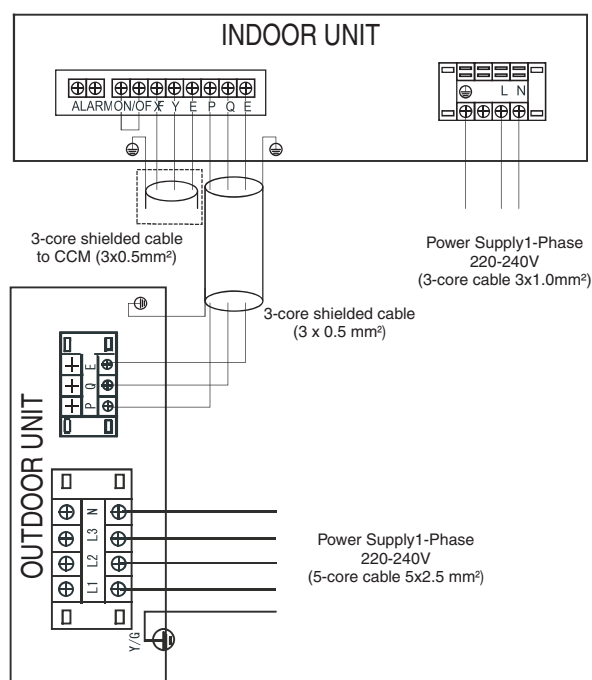


For 36000-60000 Btu/h

12. WIRING CHART



Models 18-60 (with 1-Phase outdoor unit)



Models 36-60 (with 3-Phase outdoor unit)

The Specification of Power

Type		18000 Btu/h	24000 Btu/h	36000-60000 Btu/h
Power	Phase	1-Phase	1-Phase	3-Phase
	Frequency and volt	220-240V - 50 Hz	220-240V - 50 Hz	380-415V - 50 Hz
Circuit breaker / Fuse (A)		30/25	40/25	40/25
Indoor unit power wiring(mm ²)		3 x 1,0	3 x 1,0	3 x 1,0
Indoor/Outdoor connecting wiring (mm ²)	Outdoor unit power	3 x 2,5	3 x 2,5	5 x 2,5
	Weak electric signal	3 core shield wire	3 core shield wire	3 core shield wire

CAUTION

The reserved function is indicated in broken line table,users can select it when necessary

CAUTION

The reserved function is indicated in broken line table,users can select it when necessary

Terminal Board Diagram

Please refer to the indoor unit wiring diagram for the wiring.

NOTE

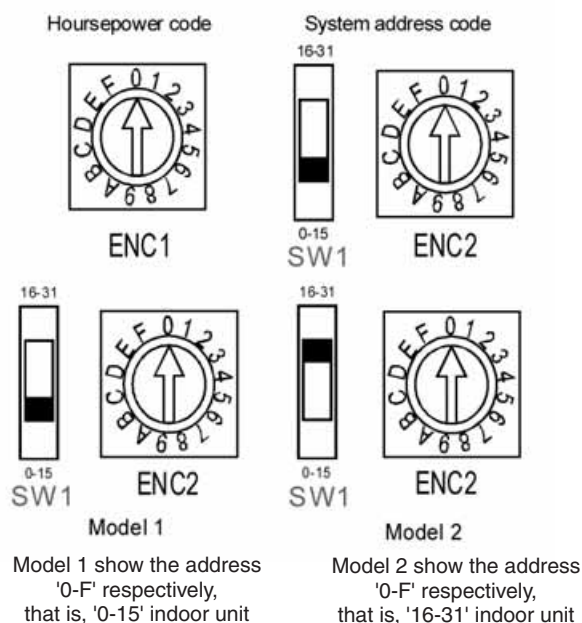
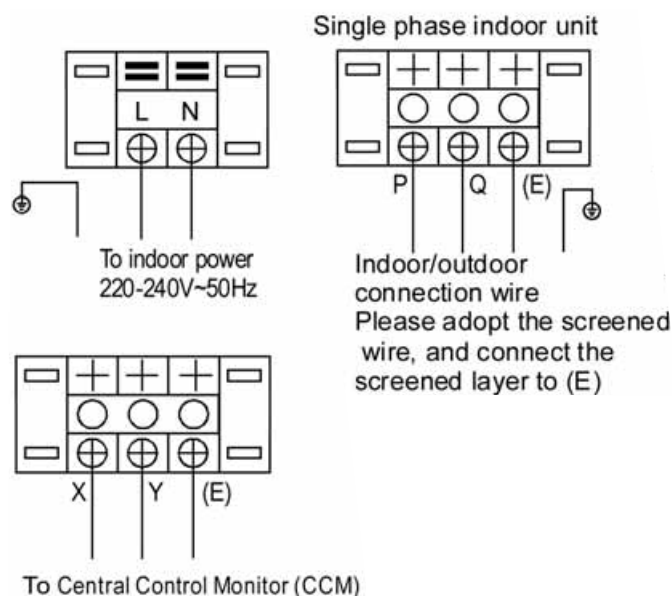
The air-conditioners can connect with Central Control Monitor (CCM). Before operation, please wiring correctly and set system address and network address of indoor units.

CONTROL

As per the different usages to set the moving switch on the PCB in the electric control box of indoor unit.

After the setting , be sure to cut down the main power supply switch, then turn it on again
Setting would be invalid without disconnecting the power.

Please number the indoor units during the installation. For example, for the first outdoor unit ,the number of the first indoor unit is 1-1, the second indoor unit is 1-2, and the set address is 1 and 2 respectively, the others is analogical.















CAUTION

1. The system together have 64 units (0-63), everyone has only system address code. If two addresses are the same in one system, the abnormal operation will occur.
2. Please switch off the power before setting, otherwise the unexpected error will occur.

Código interruptor de palanca	Capacidad (Btu/h)
4	18000
5	24000
8	36000
9	48000
9	60000

13. NETWORK ADDRESS SET

Every air-conditioner in network has only one network address to distinguish each other. Address code of air-conditioner in LAN is set by code switch on Network Interface Module (NIM), and the set range is 0-63

Network address code				
		~		00-15
		~		16-31
		~		32-47
		~		48-63

N°	Type	Contents	LED Lamp Flash	Remarks
1	Malfunction	The evaporator sensor check point is abnormal, or room temp. sensor is abnormal	Run lamp flashes at 2.5 Hz	After the malfunctions disappear, it restores automatically
2	Malfunction	Indoor/Outdoor unit communication is abnormal	The timer lamp flashes at 2.5 Hz	After the malfunctions disappear, it restores automatically
3	Malfunction	Condenser sensor check point is abnormal or outdoor temp. sensor is abnormal	All the indoor alarm lamps flash at 0.5 Hz	After the malfunctions disappear, it restores automatically
4	Malfunction	Water level switch is abnormal	Alarm lamp flashes at 2.5 Hz	If the malfunctions can't be solved in three min. all the indoor alarm lamp flashes at 0.5 Hz. Turn off the power to restore.
5	Alarm	Mode conflict	Defrost lamp flashes at 2.5 Hz	When the indoor unit turns to heating mode or is turned off, the alarm will disappear

14. TEST OPERATION

1. The test operation must be carried out after the entire installation has been completed.

2. Please confirm the following points before the test operation:

3. According to the user's requirement, install the remote controller frame where the remote controller's signal can reach the indoor unit smoothly.

4. Test operation

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The heating insulation works well.
- The ground wiring is connected correctly.
- The length of the tubing and the added storage capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor and indoor units.
- The gas-side and liquid-side stop valves are both opened.
- The air conditioner is pre-heated by turning on the power.

Set the air conditioner under the mode of COOLING with the remote controller, and check the following points per the Owner's Manual. If there is any malfunction, please resolve it through chapter "Troubles And Causes" in the Owner's Manual.

1) The indoor unit

- a. Whether the switch on the remote controller works well.
- b. Whether the buttons on the remote controller works well.
- c. Whether the air flow louver moves normally.
- d. Whether the room temperature is adjusted well.
- e. Whether the indicator lights normally.
- f. Whether the temporary buttons works well.
- g. Whether the drainage is normal.
- h. Whether there is vibration or abnormal noise during operation.

2) The outdoor unit

- a. Whether there is vibration or abnormal noise during operation.
- b. Whether the generated wind, noise, or condensed water by the air conditioner have influenced your neighborhood.
- c. Whether any of the refrigerant is leaked.

CAUTION

A protection device delays the start of compressor for about 3 minutes when it is restarted immediately after switching on the power.

15. POINT CHECK INSTRUCTION

0. Normally display

1. Running mode:

0. Stand by
2. Cooling
3. Heating
4. Forced cooling

2. Running fan speed

0. Turn off
1. Low speed
2. High speed

3. Capacity demand

4. T3-Outdoor pipe temp. (Actual value)

5. TP-Discharge temp. (Actual value, if over 100 degree, only display hundreds digit and tens digit)

6. T4-Ambient temp. (Actual value)

7. Current of compressor

8. PMV opening degree

9. The last error or protection code (Display 00 if no error)

10. Display

16. DISPLAY FUNCTION INSTRUCTION

1. When stand by, LED displaying the amount of indoor units online which communicate with outdoor units
2. When operation, LED displaying frequency value of compressor
3. When defrost, LED displaying dF

17. MALFUNCTION CODE OF OUTDOOR UNIT

Display	Malfunction or Protection
E0	EEPROM malfunction
E2	Communication malfunction between indoor/outdoor units
E3	Communication malfunction between DSP/outdoor units
E4	T4 temperature sensor malfunction
E5	Compressor Voltage protection
P0	Compressor Top Temperature Protection
P1	High Pressure Protection
P2	Low Pressure Protection
P3	Compressor current protection
P4	Compressor discharge temperature protection
P5	Protección de alta temperatura
P6	Module protection

CAUTION

Please cut off the power supply when appearing the above malfunction, check the voltage provided is out of range, check if the installation of air-conditioner is correct, then electrify again after 3 minutes power off. If the problem is still existent, please contact the local service station or the equipment provider.

EN

Instalation Manual



SALVADOR ESCODA S.A.®

MUND  CLIMA®

BARCELONA

Head Office:

Provença, 392, pl 1 & 2
08025 BARCELONA

Export Department:

export@salvadorescoda.com

Tel. + 34 93 446 27 81

Fax + 34 93 446 27 96